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Tritium Laboratory
2 July 2019

SWAB REPORT #950

SWAB DATE: 25 June 2019

R/V Kilo Moana and Hawaii Van #23

James Happell

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COMMENTS TO SWAB REPORTS 12 May 2014

Typical LSC instrument background values for ^{3}H and ^{14}C are 2 and 5 cpm, respectively. The LSC is a Tricarb 2910 TR with the low level counting option.

All samples are counted for 60 minutes, the instrument background is subtracted, and activities are reported in dpm/m^2. Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in dpm/m^2. An error larger than the activity indicates that the activity is not significantly different from zero.

Criteria for SWAB Results

Category	^{3}H (dpm/m^2)	^{14}C (dpm m^2)	Recommendations
A	<500	<50	No action
B*	500-10,000	50-10,000	Needs cleaning before any natural tracer work. Decks in radiation vans with activities above 1000 dpm/m^2 should be cleaned.
C**	10,000-100,000	10,000-50,000	Must be cleaned before any use.
D***	>100,000	>50,000	May be a health hazard. Notify local radiation safety official.

Note: ^{14}C and ^{35}S have peak energies of 156 and 167 KeV, respectively; thus ^{35}S will be registered as ^{14}C by our counting techniques. Categories A, B and C are not a health hazard.

Recommended Cleaning Proceedure

Wearing ordinary household rubber gloves:

^{3}H: Wash and scrub with radioactive cleanup detergent such as COUNT-OFF (50 ml COUNT-OFF to 4 liters of water), using sponges to distribute solution and reabsorb it.

^{14}C: Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing $^{14}CO_2$). Follow up with wash as if for ^{3}H.

Disposal of Cleaning Materials (gloves, sponges, etc)

Categories A & B dispose as ordinary garbage, C & D contact your institution's radiation safety office.

Note: If category C or D is encountered, we try to notify the insitution promptly by phone or email.

REPORT FOR SWAB # 950

LOCATION:Honolulu, Hawaii
VESSEL/LAB: *R/V Kilo Moana*

DATE: 25 June 2019
TECHNICIAN: Charlene Grall

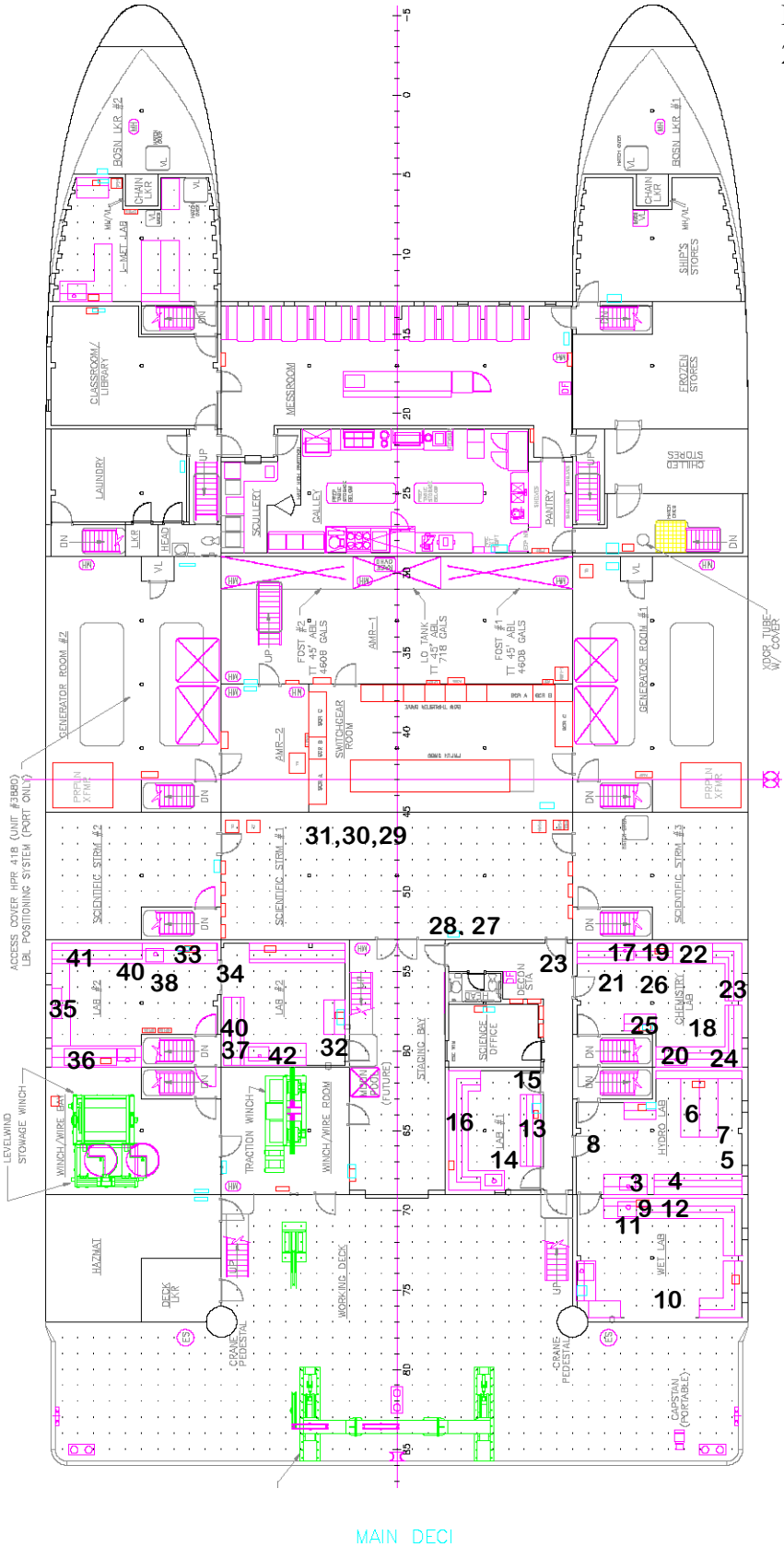
Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		error	activity		error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank	25	±	68	-15	±	82
	Hydro Lab (Figure 1)						
3	Aft sink area	56	±	67	-27	±	78
4	Forward benchtop	33	±	69	-18	±	55
5	Starboard benchtop, aft section	62	±	84	-49	±	59
6	Port benchtop	-3	±	45	5	±	40
7	Deck in front of starboard bench	30	±	50	0	±	13
8	Deck inside port entrance	31	±	82	-25	±	61
	Wet Lab (Figure 1)						
9	Sink area	32	±	99	-32	±	65
10	Deck inside aft hanger door entrance	22	±	77	-16	±	54
11	Port benchtop	0	±	11	-17	±	46
12	Starboard benchtop	48	±	64	-18	±	75
	Lab #1 (Figure 1)						
13	Starboard benchtop	5	±	25	11	±	38
14	Deck below aft sink	6	±	47	0	±	22
15	Deck at forward entrance	63	±	59	-14	±	39
16	Port benchtop	-20	±	0	-11	±	41
	Chemistry Lab (Figure 1)						
17	Forward sink area	17	±	36	12	±	36
18	Deck in front of aft sink	5	±	9	-33	±	115
19	Benchtop between sink and fume hood	3	±	15	12	±	38
20	Aft sink area	-10	±	81	16	±	40
21	Deck at port entrance	15	±	63	-6	±	32
22	Inside fume hood	18	±	62	-7	±	18
23	Starboard benchtop between portholes	69	±	55	-12	±	45
24	Aft benchtop	38	±	77	-31	±	82
25	Center benchtop opposite aft sink	44	±	58	-11	±	44
26	Inside Kenmore refrigerator	56	±	61	-14	±	28

Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		error	activity		error
	Scientific Storage Area (Figure 1)						
27	Inside Cospolich refrigerator 1	9	±	316	-15	±	33
28	Inside Cospolich refrigerator 2	43	±	51	-3	±	29
29	Top of Kenmore chest freezer #3	44	±	61	-15	±	52
30	Top of Kenmore chest freezer #2	23	±	85	-20	±	44
31	Top of Kenmore chest freezer #1	29	±	76	-21	±	69
	Lab #2 (Figure 1)						
32	Deck inside entrance	13	±	205	-21	±	68
33	Forward sink area	46	±	74	-32	±	67
34	Deck at bulkhead between lab spaces	30	±	82	-22	±	105
35	Port benchtop center section	18	±	41	-38	±	111
36	Port aft sink area	45	±	72	-27	±	69
37	Benchtop opposite of port aft sink	14	±	93	-13	±	48
38	Deck in front of port aft sink	-4	±	52	15	±	40
39	Initial bucket sample C.O. #2	-26	±	87	-16	±	71
40	Benchtop against center bulkhead	0	±	9	-13	±	39
41	Forward port benchtop next to forward sink	2	±	14	-11	±	22
42	Aft sink area	8	±	35	-20	±	58
	Miscellaneous areas (No figure)						
43	Deck in center of Computer Lab	10	±	12	-28	±	66
44	Companionway inside exit to port weather deck	25	±	93	-24	±	91
	Hawaii Van #23 (Figure #2)						
45	Benchtop to left of entrance	18	±	29	27	±	38
46	Sink area	382	±	70	36	±	26
47	Benchtop opposite of #45	274	±	68	-1	±	16
48	Benchtop opposite of #49	129	±	64	-1	±	33
49	Benchtop to right of entrance	148	±	67	-25	±	74
50	Inside freezer (ice melt only)	1155*	±	103	44	±	18
51	Inside refrigerator	1490*	±	117	60*	±	19
52	Center of deck of van	1225*	±	114	72*	±	23
53	Final bucket blank	-9	±	22	-6	±	19

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. Reports may now contain values less than zero. When decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded the negative values to zero. Values are only significantly above background when they are positive and larger than the error. All areas tested on the ship were free from contamination. Radioisotope Van #23 had minor ^{3}H and ^{14}C contamination. No action is required.

SWAB # 950
Figure 1
25 June 2019



Hawaii Van #23